

ATOMIC ENERGY *newsletter*®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

Dear Sir:

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Exports of uranium concentrates by Canada for 1957 totaled \$127.9 million in sales value, a new record for this commodity. The 1957 values compare with \$45.7 million worth of such concentrates which were exported in 1956 by that country. Sales to U. S., which constituted largest portion of such exports, were made at an average price of \$11.15 per pound of the concentrates. (Domestic purchases of uranium concentrates by the U. S. reached \$171 million in 1957, up from the \$134 million bought in 1956. Domestic buying price is \$9.60 per pound.) ...Thorium and uranium exports from South Africa amounted to \$49,859,496 in 1957, according to preliminary figures of the S. African Department of Excise and Customs. In 1956, some \$38,695,080 of such exports were reported.

First nuclear reactor fuel shipment to be exported from U. S. to France has been made to the French Government by the USAEC. Consisting of 35 fuel rods of enriched uranium, fabricated by Babcock & Wilcox Co., the shipment will be used in a pool-type reactor to be located at Centre d'Etudes Nucleaires, Grenoble. Reactor is now being designed by Indatom, a French engineering concern. Valued at \$118,000, the uranium is leased to France under terms of bi-lateral agreement between that country and the U. S. (Other BUSINESS NEWS, p. 2 this LETTER.)

Research laboratories to enable increased efforts in nuclear power work are to be built for C. A. Parsons & Co., at Heaton, Newcastle; costs may be over \$1 million. Chairman Sir Claude Gibb, of the British concern, said the laboratories would make Heaton a major center of nuclear research. It is expected that building should be completed by the end of this year.

Contracts have now been let for preliminary engineering and design studies for conversion to nuclear power of a tanker now under construction. Awards, made by the USAEC and the Maritime Administration, were to George G. Sharp, Inc., as the ship design agent, and General Electric Co., as the reactor designer. The studies which will take about 3-months, will outline engineering problems involved and provide a basis for cost estimates for the conversion. The tanker, under construction at Ingalls Shipbuilding Corp., Pascagoula, Miss., is a 22,500 deadweight ton prototype, designed for a normal speed of 20-knots at 20,000 shaft horsepower. (Other CONTRACT NEWS, p. 3 this LETTER.)

Sales and earnings of High Voltage Engineering Corp., Burlington, Mass., showed gains for 1957 which were highest in the company's 11-year history. Sales for 1957 for this manufacturer of particle accelerators were \$4,894,074, with income after taxes \$330,435. Per share earnings were 89¢ against 45¢ in 1956. New orders for the year reached \$6 million, with backlog at year-end of \$6.8 million. (Other FINANCIAL NEWS, p. 3 this LETTER.)

Proposals for revision of USAEC patent regulations will be heard at public meeting scheduled for April 15th by the Commission in its Washington office at 1717 H St., N.W. Agenda will be available before the end of March from the Commission's general counsel at this address. (Other MEETINGS, COURSES, CONFERENCES, p. 4.)

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ATOMIC ENERGY BUSINESS NEWS...

NEW NUCLEAR POWER PLANT TO BE BUILT BY WEST COAST UTILITY:- Decision has been made by Pacific Gas & Electric Co. to build 60,000 electrical kw nuclear power plant beside its existing steam plant on Humboldt Bay in northern California. According to PG&E's president, N. R. Sutherland, it will be the first privately financed U.S. nuclear power plant to be justified solely on its economics. General contractor is Bechtel Corp., who will design and build the plant on a turn key, fixed price basis. Bechtel handled the Vallecitos, Calif., job whose General Electric-built reactor has successfully operated at over two times its design steam-generating capacity; advances in the design and technology of boiling water reactors developed through experience there will reduce power generation costs, for the new PG&E plant. Plant design will follow that of the Vallecitos unit, and is expected to produce power at an estimated cost of 8.7 mills. This will be economic for PG&E since its present high fuel oil costs make costs of its present power, produced by conventional means, about 8 mills per kwh. Plant cost is estimated at \$20 million, exclusive of land, compared with \$11 million for conventionally fueled steam plant. Reactor will be of the boiling water type using 2% enriched uranium oxide fuel. It will operate at 1000 psi and about 545 deg. F.

FINAL COST FIGURES OF SHIPPINGPORT PLANT GIVEN:- Overall cost of the Shippingport, Pa., nuclear power station totaled \$121,400,000 according to final figures of the three principals involved: Westinghouse Electric Corp., Duquesne Light Co., and the USAEC. Included in the total is \$48,900,000 for research and development spent before the plant went into full operation (some three months ago). Plant has power costs of 64 mills per kwh based on a 60,000 kw output. Since it will be run ultimately at a net power level greater than 60,000 kw, the kwh cost will be lower. Breakdown of costs shows that Westinghouse Electric (builder of the pressurized water reactor, and supplier of much plant equipment) put up \$500,000; Duquesne Light (operator of plant and into whose grid power is now being fed) put up \$22,500,000; and the USAEC put up \$98,400,000.

NEW BUSINESS OFFICE FOR AIR FORCE NUCLEAR PROGRAMS:- Office of the assistant for nuclear programs, with headquarters at Andrews Air Force Base, Md., has been set up by Air Force Research & Development Command (ARDC) to assist industrial participation in nuclear programs of the Air Force. New office, headed by Col. John H. deRussy, supersedes ARDC's nuclear systems office at Dayton, Ohio, which handled only the nuclear powered bomber project. USAEC will continue to have responsibility for aircraft reactors, with the ARDC office handling development of the airframe or other basic test vehicle, test and training equipment, etc. In addition to the ARDC office also handling end-product hardware for the bomber program, it will be concerned with nuclear propelled ramjets, satellites, and space travel. (New arrangements will also have this office paying contractors for all nuclear programs in the ARDC.)

LICENSE NOTES:- License is being issued by USAEC to Isotopes Specialties Co., Inc., Burbank, Calif., to collect radioactive waste and dispose of it in 55-gallon barrels sunk at 1,000 fathom depths in the Pacific. Company's previous license permitted it to handle smaller amounts; new action increases amount it may dump. (Other firms holding licenses to dump radioactive wastes at sea are Crossroads Marine Disposal & Salvage Co., Boston, Mass.; Reed Curtis Nuclear Industries, Culver City, Calif.; and Nuclear Engineering Co., Inc., San Francisco, Calif.)..... License by USAEC is to be granted ACF Industries, Inc., to export 1-watt training reactor to Technicas Hispano Americanas, S.A., Madrid, for exhibit at the June 1958 Barcelona Fair..... Construction permit of Daystrom, Inc., has been cancelled by USAEC, at company's request, for projected \$150,000 industrial research reactor at Caldwell, N.J. Daystrom has moved its nuclear division, formerly at Caldwell, to Archbald, Pa., and integrated it with its instrument division there..... Construction permit of Yankee Atomic Electric Co., for its Rowe, Mass., nuclear power plant has been amended by the company as a result of Yankee's decision to recycle scrap instead of returning it to the USAEC.

URANIUM PRODUCTION FIGURES SHOW UPWARD TREND:- Monthly and annual 1957 domestic uranium production figures, recently released by the USAEC, show ore reserves at year end of 78 million tons; ore receipts for 1957 of 3,676,000 tons; ore processed for the year 3,575,000 tons with an average of 0.27% uranium oxide; and ores in stockpile 2,033,000 tons. Total ore processing in all U.S. mills was 10,700 tons per day in December, 1957, up from 9,000 tons per day in January 1957.

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ATOMIC ENERGY FINANCIAL NEWS...

SALES AND NET UP FOR FIRM IN NUCLEAR FIELD:- Sales for 1957 for Vitro Corp. of America were up sharply from 1956, while net income more than doubled in the period, J. Carlton Ward, president, has announced. Net income for 1957 was \$1,514,517, compared with \$617,515 for 1956, while sales in 1957 rose to \$63,137,210 from \$40,898,531 in 1956. It was indicated that Vitro's operations in the field of atomic energy, which are widely spread from the mining and processing of uranium to the design and engineering of complete reactor and production facilities, were profitable overall. At year's end, Vitro's backlog decreased to \$95 million compared with \$114 million at the end of 1956. Reduction was due to billings against long-term uranium contracts with the USAEC running until 1961 and 1962, and holdup of Defense Department orders in the last half of 1957.

VENTURE CAPITAL COMPANY SHOWS FALL-OFF IN MARKET VALUE OF HOLDINGS:- American Research & Development Corp., Boston, closed-end investment company which has assisted in financing companies in the nuclear field, had investments of \$6,512,762 in some twenty-three companies, at the close of 1957. Although market value of the invested assets was \$8,643,539 at the year end, it was about 33% below that of a year earlier. Holdings of ARD of firms with nuclear activities include 13% of the common stock of High Voltage Engineering Corp., Burlington, Mass.; and 14% of the common stock and 25% of a second mortgage note of Tracerlab, Inc., Waltham, Mass.

BIDS ASKED, CONTRACTS LET...on nuclear projects...

Firms interested in doing research and development that will provide information and technology for developing additional control rod materials (for use in nuclear reactors) are invited to advise the USAEC of this interest. Further information is obtainable from USAEC, Chicago Operations Office, P.O. Box 59, Lemont, Ill. Deadline is March 21st; invitations for proposals will be issued on that date.

On low bid of \$1,845,000, against 15 other bidders, Malan Construction Corp., New York, N.Y., has received USAEC contract to construct laboratory, office, and service buildings for the Model C Stellerator thermonuclear research facility at Princeton University's Forrestal Research Center, Plainsboro Township, N.J. Architect engineer on the facilities at the Center is Walter Kidde Constructors, Inc. (A series of large experimental devices and associated apparatus for research into controlled thermonuclear reactions will be housed in separate buildings at the Center, for which separate design, engineering and construction will be performed.)

Radiation instrument research contracts currently running, have been renewed by the USAEC with Airborne Instruments Laboratory, Inc., and Levinthal Electronic Products, Inc. Airborne's renewal gives it USAEC funds of \$56,592.00 for one year for developing automatic scanning of nuclear emulsions. K. C. Speh heads this work at Airborne. Levinthal receives USAEC funds of \$35,800.00 for one year for a study of scintillation and other related properties of sodium iodide crystals; W. J. Van Sciver is the investigator.

Contracts have been signed by representatives of the USAEC and the Government of Italy to sell approximately 2,000 kilograms of reactor grade normal uranium in the form of aluminum clad rods. They will be used in the construction of a subcritical assembly at the University of Cagliari, Sardinia. In another transaction, representatives of the Commission and the Government of Australia signed a contract for sale to Australia of 2,000-lbs. of heavy water for use in a materials testing and research reactor and in support of reactor physics experimental work.

On the basis of proposal made to the USAEC by Nuclear Products-Erco division of ACF Industries, Inc. with General Electric Co., only other proposer, a cost-type contract with maximum ceiling price will be negotiated by the Commission for ACF's design, development, construction and test operation of a boiling water nuclear reactor, and conventional fuel-fired superheater on system of Rural Cooperative Power Association, Elk River, Minn. Title to the reactor will rest in the Commission. Sargent & Lundy, Chicago, Ill., will be architect-engineer on the project; Maxon Construction Co., Dayton, Ohio, will be construction subcontractor. (Financial arrangement is for the Cooperative to purchase steam from the Commission to operate generating portion of the plant. The plant site and non-nuclear portion of the plant, other than the superheater, will be supplied by the Cooperative, which will also operate it.) Design capacity is 22,000 net kw of electricity.) Full operation is scheduled for early 1960; construction is to begin this Spring.

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PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- Dual rate meter, model 412, is a premium log and linear multirange meter for fast quantitative analysis of medical or industrial samples, and for reactor monitoring. --Baird-Atomic, Inc., 33 University Rd., Cambridge 38, Mass.

New electrometer, model E-100, is said to have high stability from doubly regulated electrometer tube, with quick and accurate response. Suggested uses include measuring neutron flux using boron ion chambers. --Gyra Electronics Corp., La Grange, Ill.

PRODUCT NEWS:- Uranium metal production began last fortnight at the Mallinckrodt-operated uranium ore processing plant of the USAEC, Weldon Spring, Missouri. The \$45 million plant also produces uranium tetrafluoride, for uranium-235 manufacture at gaseous diffusion plants.

A radiation-resistant adhesive, tradenamed Weld-O-Bond (no. 3111) has completed a year of satisfactory service as a bonding agent on solid concrete blocks forming the walls of test vaults used for radiation emitting apparatus. The special adhesive, produced by California Stucco Products, Inc., Cambridge, Mass., is said to have good compressive and shear strength; low tensile strength to permit disassembly; as well as being completely radiation-resistant.

Charges have now been set up by the USAEC for recovering source and special nuclear materials contained in irradiated fuel elements or blanket materials removed from privately operated nuclear reactors. Work will be done at USAEC facilities at these schedules. (1) Converting purified low-enrichment uranyl nitrate into uranium hexafluoride; \$5.60 per kg of contained uranium. (2) Converting purified high-enrichment uranyl nitrate into uranium hexafluoride; \$32.00 per kg of contained uranium. (3) Converting purified plutonium nitrate into plutonium metal; \$1.50 per gram of contained plutonium.

MANUFACTURERS' LITERATURE:- All-purpose safety enclosure with modular construction is described in technical bulletin A-11 of S. Blickman, Inc., 8400 Gregory Ave., Weehawken, N. J.

Ion chambers, for nuclear reactors, said to be highly resistant to shock and vibration, and capable of operating up to 300 deg. C., are covered in bulletin GEA-6631 of General Electric Co., Schenectady, N.Y.

Globe valves of stainless steel, Monel, or other corrosion resistant material, and with ASA ratings of 600, 1500, and 2500-lbs., are described in bulletin B-2 of Associated Valve & Engineering Co., 1150 Marquette Rd., Chicago, Ill.

MEETINGS, COURSES, CONFERENCES...

COURSES:- Two nuclear energy programs are being offered by University of California, Berkeley, this Summer. Nuclear engineering survey from July 7-11 is a one-week non-technical course for executives covering finance, engineering, economics, etc.; fee is \$150. Nuclear engineering short course from June 16-August 15 is intensive training for engineers in the basics of nuclear energy and its industrial applications. Tuition is \$800.

Principles of Radioisotope Utilization is a two-week course offered July 14 through July 25 by Massachusetts Institute of Technology, Cambridge, Mass. The course will review the basic aspects of the production and use of radioisotopes and radiation and survey recent advances. Tuition is \$250 for the course.

Degree of M.S. in nuclear science is now being offered by Clemson College, Clemson, S. C. Thesis research is done at the laboratories of the Savannah River Plant of the USAEC in Aiken, S. C., which are contract-operated by E. I. du Pont de Nemours & Co.

CONFERENCES:- American Power Conference, March 26-28, Chicago, will have two daytime sessions devoted to nuclear energy as well as an evening forum on the subject. Details may be obtained from E. R. Whitehead, Illinois Institute of Tech., Chicago 16, Ill.

MEETINGS:- American Chemical Society's San Francisco meeting April 15-18 will include symposia on nuclear chemistry; on reactor fuel preparation and fuel recycle; on fuel reprocessing; on uses of radiation in industrial chemical reactions; on extraction of uranium and thorium from ores; and on radiochemical analysis. Complete program may be obtained from ACS, 1155 16th St., N. W., Washington, D. C.

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ATOMIC ENERGY PATENT DIGEST...

ISSUED March 4th, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) High speed counter circuit. G. F. Ziffer, inventor. No. 2,825,805 assigned to Tracerlab, Inc., Boston, Mass. (2) System for maintaining constant quality and quantity of x-radiation from generator. T. H. Rogers, inventor. No. 2,825,816 assigned to Machlett Laboratories, Inc., Springdale, Conn.

ISSUED March 4th, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Metal production and casting. T. T. Magel, inventor. No. 2,825,105 assigned to USAEC. (2) Grab mechanisms. K. H. Dent, inventor. No. 2,825,599 assigned to USAEC. (3) Power generating nuclear reactor system. H. C. Vernon, inventor. No. 2,825,688 assigned to USAEC. (4) Nuclear reactor and fuel element therefor. Leo Szilard, G. J. Young, inventors. No. 2,825,689 assigned to USAEC. (5) Gas phototube circuit. J. H. Richardson, inventor. No. 2,825,818 assigned to USAEC.

ISSUED March 11th, 1958 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1) Method of extracting uranium values from uranium bearing material. F. A. Forward, J. Halpern, inventors. No. 2,826,481 assigned to Canadian Patents & Development Ltd., Ottawa, Ontario, Canada. (2) Methods of measuring flow by radioactivity. D. E. Hull, inventor. Nos. 2,826,699 & 2,826,700 assigned to California Research Corp., San Francisco, Calif.

ISSUED March 11th, 1958 to GOVERNMENTAL ORGANIZATIONS:- (1) Automatic sampling device. J. E. Boretz, J. A. Bolton, J. B. Williams, inventors. No. 2,826,076 assigned to USAEC. (2) Alloy for use in nuclear fission. F. H. Spedding, H. A. Wilhelm, inventors. No. 2,826,495 assigned to USAEC. (3) Vapor shield for induction furnace. S. L. Reese, S. O. Samoriga, inventors. No. 2,826,624 assigned to USAEC. (4) Plasma generator. J. S. Foster, Jr., inventor. No. 2,826,708 assigned to USAEC.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

The Industrial Challenge of Nuclear Energy; Research, Uses, Social Problems. Papers given during second information conference on nuclear energy for management sponsored by OEEC, and held in Amsterdam June 24-28, 1957. 301 pages. --OEEC Mission, 1346 Conn. Ave., N.W., Wash. 6, D. C. (\$3.50)

Effects of Atomic Radiation on Oceanography & Fisheries. Findings and recommendations of committee of National Academy of Sciences. National Research Council publication no. 551. --Superintendent of Documents, Wash. 25, D. C. (\$2.00)

Russian-English Glossary of Nuclear Physics & Engineering; I. Emin, editor. 195 pages. -- Consultants Bureau, Inc., New York 11, N.Y. (\$10.00)

The Isotope Index; third edition. Source of commercially available isotopes, from more than 50 U. S., Canadian, British, French, and German suppliers. --Scientific Equipment Co., Indianapolis 19, Ind. (\$2.50)

Development of Photomultiplier Tubes; report 26 for May 1-July 31, 1957. Work done under USAEC contract by tube research division, A.B. DuMont Laboratories, Passaic, N.J. 14 pages No. RIB-30. (50¢)..... Annotated Bibliography on Long Range Effects of Fallout from Nuclear Explosions. Nov. 1957. Supplement no. 2. 23 pages. No. NYO-4753. (75¢)..... Plutonium Recycle Program, Annual report of USAEC's program (for fiscal year 1957) at Hanford Works. No. HW-52000. (\$2.75)..... Source & Special Materials Management. Papers presented at conference June 17-19, 1957, Washington, D.C. 147 pages. No. TID-7541; pt. 1. (\$4.00) -- Above from Office of Technical Services, Wash. 25, D. C.

Radioisotopes; What They Are & How They Are Produced. Background information on radioisotopes. Tech. Bulletin RP-1..... Decay Tables for Radioactive Isotopes. Rate of decay of industrially used radioisotopes. Technical bulletin DK-2. --Atomic Energy of Canada, Ltd., Ottawa, Ontario, Canada (n/c)

NOTES:- List No. 27 dated February 1958 has been issued by U. K. Atomic Energy Authority of original documents and translations issued by the UKAEA, and where they may be obtained. List is available from H.M. Stationery Office, London.

The Atom in the Electric Business is a discussion of the electric power industry in the U. S. and its use of nuclear energy. It may be obtained from Electric Companies Public Information Program, 2 W. 45th St., New York 36.

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

March 18th, 1958

